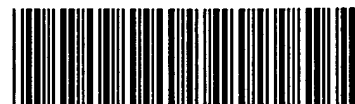


1645

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NOV 27 2002

TECH CENTER 1600/2900



1600

#27  
JMS  
11/29/02

## RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/461,580C

DATE: 11/21/2002

TIME: 10:29:34

Input Set : A:\13407-016001.txt

Output Set: N:\CRF4\11212002\I461580C.raw

4 <110> APPLICANT: Guarente, Leonard  
 5 Imai, Shin-ichiro  
 6 Armstrong, Christopher  
 8 <120> TITLE OF INVENTION: METHODS FOR IDENTIFYING AGENTS WHICH ALTER HISTINE  
 9 PROTEIN ACETYLATION, DECREASE AGING, INCREASE LIFESPAN  
 11 <130> FILE REFERENCE: 13407-016001  
 13 <140> CURRENT APPLICATION NUMBER: 09/461,580C  
 14 <141> CURRENT FILING DATE: 1999-12-15  
 16 <160> NUMBER OF SEQ ID NOS: 38  
 18 <170> SOFTWARE: FastSEQ for Windows Version 4.0  
 20 <210> SEQ ID NO: 1  
 21 <211> LENGTH: 737  
 22 <212> TYPE: PRT  
 23 <213> ORGANISM: Mus musculus  
 25 <400> SEQUENCE: 1

26 Met Ala Asp Glu Val Ala Leu Ala Leu Gln Ala Ala Gly Ser Pro Ser  
 27 1 5 10 15  
 28 Ala Ala Ala Ala Met Glu Ala Ala Ser Gln Pro Ala Asp Glu Pro Leu  
 29 20 25 30  
 30 Arg Lys Arg Pro Arg Arg Asp Gly Pro Gly Leu Gly Arg Ser Pro Gly  
 31 35 40 45  
 32 Glu Pro Ser Ala Ala Val Ala Pro Ala Ala Ala Gly Cys Glu Ala Ala  
 33 50 55 60  
 34 Ser Ala Ala Ala Pro Ala Ala Leu Trp Arg Glu Ala Ala Gly Ala Ala  
 35 65 70 75 80  
 36 Ala Ser Ala Glu Arg Glu Ala Pro Ala Thr Ala Val Ala Gly Asp Gly  
 37 85 90 95  
 38 Asp Asn Gly Ser Gly Leu Arg Arg Glu Pro Arg Ala Ala Asp Asp Phe  
 39 100 105 110  
 40 Asp Asp Asp Glu Gly Glu Glu Glu Asp Glu Ala Ala Ala Ala Ala Ala  
 41 115 120 125  
 42 Ala Ala Ala Ile Gly Tyr Arg Asp Asn Leu Leu Leu Thr Asp Gly Leu  
 43 130 135 140  
 44 Leu Thr Asn Gly Phe His Ser Cys Glu Ser Asp Asp Asp Arg Thr  
 45 145 150 155 160  
 46 Ser His Ala Ser Ser Ser Asp Trp Thr Pro Arg Pro Arg Ile Gly Pro  
 47 165 170 175  
 48 Tyr Thr Phe Val Gln Gln His Leu Met Ile Gly Thr Asp Pro Arg Thr  
 49 180 185 190  
 50 Ile Leu Lys Asp Leu Leu Pro Glu Thr Ile Pro Pro Pro Glu Leu Asp  
 51 195 200 205  
 52 Asp Met Thr Leu Trp Gln Ile Val Ile Asn Ile Leu Ser Glu Pro Pro  
 53 210 215 220

P.6  
ENTERED

## RAW SEQUENCE LISTING

DATE: 11/21/2002

PATENT APPLICATION: US/09/461,580C

TIME: 10:29:34

Input Set : A:\13407-016001.txt

Output Set: N:\CRF4\11212002\I461580C.raw

```

54 Lys Arg Lys Lys Arg Lys Asp Ile Asn Thr Ile Glu Asp Ala Val Lys
55 225                230                235                240
56 Leu Leu Gln Glu Cys Lys Lys Ile Ile Val Leu Thr Gly Ala Gly Val
57                245                250                255
58 Ser Val Ser Cys Gly Ile Pro Asp Phe Arg Ser Arg Asp Gly Ile Tyr
59                260                265                270
60 Ala Arg Leu Ala Val Asp Phe Pro Asp Leu Pro Asp Pro Gln Ala Met
61                275                280                285
62 Phe Asp Ile Glu Tyr Phe Arg Lys Asp Pro Arg Pro Phe Phe Lys Phe
63                290                295                300
64 Ala Lys Glu Ile Tyr Pro Gly Gln Phe Gln Pro Ser Leu Cys His Lys
65 305                310                315                320
66 Phe Ile Ala Leu Ser Asp Lys Glu Gly Lys Leu Leu Arg Asn Tyr Thr
67                325                330                335
68 Gln Asn Ile Asp Thr Leu Glu Gln Val Ala Gly Ile Gln Arg Ile Leu
69                340                345                350
70 Gln Cys His Gly Ser Phe Ala Thr Ala Ser Cys Leu Ile Cys Lys Tyr
71                355                360                365
72 Lys Val Asp Cys Glu Ala Val Arg Gly Asp Ile Phe Asn Gln Val Val
73                370                375                380
74 Pro Arg Cys Pro Arg Cys Pro Ala Asp Glu Pro Leu Ala Ile Met Lys
75 385                390                395                400
76 Pro Glu Ile Val Phe Phe Gly Glu Asn Leu Pro Glu Gln Phe His Arg
77                405                410                415
78 Ala Met Lys Tyr Asp Lys Asp Glu Val Asp Leu Leu Ile Val Ile Gly
79                420                425                430
80 Ser Ser Leu Lys Val Arg Pro Val Ala Leu Ile Pro Ser Ser Ile Pro
81                435                440                445
82 His Glu Val Pro Gln Ile Leu Ile Asn Arg Glu Pro Leu Pro His Leu
83                450                455                460
84 His Phe Asp Val Glu Leu Leu Gly Asp Cys Asp Val Ile Ile Asn Glu
85 465                470                475                480
86 Leu Cys His Arg Leu Gly Gly Glu Tyr Ala Lys Leu Cys Cys Asn Pro
87                485                490                495
88 Val Lys Leu Ser Glu Ile Thr Glu Lys Pro Pro Arg Pro Gln Lys Glu
89                500                505                510
90 Leu Val His Leu Ser Glu Leu Pro Pro Thr Pro Leu His Ile Ser Glu
91                515                520                525
92 Asp Ser Ser Ser Pro Glu Arg Thr Val Pro Gln Asp Ser Ser Val Ile
93                530                535                540
94 Ala Thr Leu Val Asp Gln Ala Thr Asn Asn Asn Val Asn Asp Leu Glu
95 545                550                555                560
96 Val Ser Glu Ser Ser Cys Val Glu Glu Lys Pro Gln Glu Val Gln Thr
97                565                570                575
98 Ser Arg Asn Val Glu Asn Ile Asn Val Glu Asn Pro Asp Phe Lys Ala
99                580                585                590
100 Val Gly Ser Ser Thr Ala Asp Lys Asn Glu Arg Thr Ser Val Ala Glu
101                595                600                605
102 Thr Val Arg Lys Cys Trp Pro Asn Arg Leu Ala Lys Glu Gln Ile Ser

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## RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/461,580C

DATE: 11/21/2002

TIME: 10:29:34

Input Set : A:\13407-016001.txt

Output Set: N:\CRF4\11212002\I461580C.raw

```

103      610      615      620
104 Lys Arg Leu Glu Gly Asn Gln Tyr Leu Phe Val Pro Pro Asn Arg Tyr
105 625      630      635      640
106 Ile Phe His Gly Ala Glu Val Tyr Ser Asp Ser Glu Asp Asp Val Leu
107      645      650      655
108 Ser Ser Ser Ser Cys Gly Ser Asn Ser Asp Ser Gly Thr Cys Gln Ser
109      660      665      670
110 Pro Ser Leu Glu Glu Pro Leu Glu Asp Glu Ser Glu Ile Glu Glu Phe
111      675      680      685
112 Tyr Asn Gly Leu Glu Asp Asp Thr Glu Arg Pro Glu Cys Ala Gly Gly
113      690      695      700
114 Ser Gly Phe Gly Ala Asp Gly Gly Asp Gln Glu Val Val Asn Glu Ala
115 705      710      715      720
116 Ile Ala Thr Arg Gln Glu Leu Thr Asp Val Asn Tyr Pro Ser Asp Lys
117      725      730      735
118 Ser
121 <210> SEQ ID NO: 2
122 <211> LENGTH: 272
123 <212> TYPE: PRT
124 <213> ORGANISM: Saccharomyces cerevisiae
126 <400> SEQUENCE: 2
127 Ile Asn Lys Val Leu Cys Thr Arg Leu Arg Leu Ser Asn Phe Phe Thr
128 1      5      10      15
129 Ile Asp His Phe Ile Gln Lys Leu His Thr Ala Arg Lys Ile Leu Val
130      20      25      30
131 Leu Thr Gly Ala Gly Val Ser Thr Ser Leu Gly Ile Pro Asp Phe Arg
132      35      40      45
133 Ser Ser Glu Gly Phe Tyr Ser Lys Ile Lys His Leu Gly Leu Asp Asp
134      50      55      60
135 Pro Gln Asp Val Phe Asn Tyr Asn Ile Phe Met His Asp Pro Ser Val
136 65      70      75      80
137 Phe Tyr Asn Ile Ala Asn Met Val Leu Pro Pro Glu Lys Ile Tyr Ser
138      85      90      95
139 Pro Leu His Ser Phe Ile Lys Met Leu Gln Met Lys Gly Lys Leu Leu
140      100      105      110
141 Arg Asn Tyr Thr Gln Asn Ile Asp Asn Leu Glu Ser Tyr Ala Gly Ile
142      115      120      125
143 Ser Thr Asp Lys Leu Val Gln Cys His Gly Ser Phe Ala Thr Ala Thr
144      130      135      140
145 Cys Val Thr Cys His Trp Asn Leu Pro Gly Glu Arg Ile Phe Asn Lys
146 145      150      155      160
147 Ile Arg Asn Leu Glu Leu Pro Leu Cys Pro Tyr Cys Tyr Lys Lys Arg
148      165      170      175
149 Arg Glu Tyr Phe Pro Glu Gly Tyr Asn Asn Lys Val Gly Val Ala Ala
150      180      185      190
151 Ser Gln Gly Ser Met Ser Glu Arg Pro Pro Tyr Ile Leu Asn Ser Tyr
152      195      200      205
153 Gly Val Leu Lys Pro Asp Ile Thr Phe Phe Gly Glu Ala Leu Pro Asn
154      210      215      220

```

## RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/461,580C

DATE: 11/21/2002

TIME: 10:29:34

Input Set : A:\13407-016001.txt

Output Set: N:\CRF4\11212002\I461580C.raw

```

155 Lys Phe His Lys Ser Ile Arg Glu Asp Ile Leu Glu Cys Asp Leu Leu
156 225                230                235                240
157 Ile Cys Ile Gly Thr Ser Leu Lys Val Ala Pro Val Ser Glu Ile Val
158                245                250                255
159 Asn Met Val Pro Ser His Val Pro Gln Val Leu Ile Asn Arg Asp Pro
160                260                265                270
162 <210> SEQ ID NO: 3
163 <211> LENGTH: 267
164 <212> TYPE: PRT
165 <213> ORGANISM: Saccharomyces cerevisiae
167 <400> SEQUENCE: 3
168 Ile Asn Lys Val Leu Ser Thr Arg Leu Arg Leu Pro Asn Phe Asn Thr
169 1                5                10                15
170 Ile Asp His Phe Thr Ala Thr Leu Arg Asn Ala Lys Lys Ile Leu Val
171                20                25                30
172 Leu Thr Gly Ala Gly Val Ser Thr Ser Leu Gly Ile Pro Asp Phe Arg
173                35                40                45
174 Ser Ser Glu Gly Phe Tyr Ser Lys Ile Arg His Leu Gly Leu Glu Asp
175                50                55                60
176 Pro Gln Asp Val Phe Asn Leu Asp Ile Phe Leu Gln Asp Pro Ser Val
177 65                70                75                80
178 Phe Tyr Asn Ile Ala His Met Val Leu Pro Pro Glu Asn Met Tyr Ser
179                85                90                95
180 Pro Leu His Ser Phe Ile Lys Met Leu Gln Asp Lys Gly Lys Leu Leu
181                100               105               110
182 Arg Asn Tyr Thr Gln Asn Ile Asp Asn Leu Glu Ser Tyr Ala Gly Ile
183                115               120               125
184 Asp Pro Asp Lys Leu Val Gln Cys His Gly Ser Phe Ala Thr Ala Ser
185                130               135               140
186 Cys Val Thr Cys His Trp Gln Ile Pro Gly Glu Lys Ile Phe Glu Asn
187 145                150               155               160
188 Ile Arg Asn Leu Glu Leu Pro Leu Cys Pro Tyr Cys Tyr Gln Lys Arg
189                165               170               175
190 Lys Gln Tyr Phe Pro Met Ser Asn Gly Asn Asn Thr Val Gln Thr Asn
191                180               185               190
192 Ile Asn Phe Asn Ser Pro Ile Leu Lys Ser Tyr Gly Val Leu Lys Pro
193                195               200               205
194 Asp Met Thr Phe Phe Gly Glu Ala Leu Pro Ser Arg Phe His Lys Thr
195                210               215               220
196 Ile Arg Lys Asp Ile Leu Glu Cys Asp Leu Leu Ile Cys Ile Gly Thr
197 225                230               235               240
198 Ser Leu Lys Val Ala Pro Val Ser Glu Ile Val Asn Met Val Pro Ser
199                245               250               255
200 His Val Pro Gln Ile Leu Ile Asn Arg Asp Met
201                260               265
203 <210> SEQ ID NO: 4
204 <211> LENGTH: 245
205 <212> TYPE: PRT
206 <213> ORGANISM: Mus musculus

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## RAW SEQUENCE LISTING

DATE: 11/21/2002

PATENT APPLICATION: US/09/461,580C

TIME: 10:29:34

Input Set : A:\13407-016001.txt

Output Set: N:\CRF4\11212002\I461580C.raw

208 &lt;400&gt; SEQUENCE: 4

```

209 Val Ile Asn Ile Leu Ser Glu Pro Pro Lys Arg Lys Lys Arg Lys Asp
210 1 5 10 15
211 Ile Asn Thr Ile Glu Asp Ala Val Lys Leu Leu Gln Glu Cys Lys Lys
212 20 25 30
213 Ile Ile Val Leu Thr Gly Ala Gly Val Ser Val Ser Cys Gly Ile Pro
214 35 40 45
215 Asp Phe Arg Ser Arg Asp Gly Ile Tyr Ala Arg Leu Ala Val Asp Phe
216 50 55 60
217 Pro Asp Leu Pro Asp Pro Gln Ala Met Phe Asp Ile Glu Tyr Phe Arg
218 65 70 75 80
219 Lys Asp Pro Arg Pro Phe Phe Lys Phe Ala Lys Glu Ile Tyr Pro Gly
220 85 90 95
221 Gln Phe Gln Pro Ser Leu Cys His Lys Phe Ile Ala Leu Ser Asp Lys
222 100 105 110
223 Glu Gly Lys Leu Leu Arg Asn Tyr Thr Gln Asn Ile Asp Thr Leu Glu
224 115 120 125
225 Gln Val Ala Gly Ile Gln Arg Ile Leu Gln Cys His Gly Ser Phe Ala
226 130 135 140
227 Thr Ala Ser Cys Leu Ile Cys Lys Tyr Lys Val Asp Cys Glu Ala Val
228 145 150 155 160
229 Arg Gly Asp Ile Phe Asn Gln Val Val Pro Arg Cys Pro Arg Cys Pro
230 165 170 175
231 Ala Asp Glu Pro Leu Ala Ile Met Lys Pro Glu Ile Val Phe Phe Gly
232 180 185 190
233 Glu Asn Leu Pro Glu Gln Phe His Arg Ala Met Lys Tyr Asp Lys Asp
234 195 200 205
235 Glu Val Asp Leu Leu Ile Val Ile Gly Ser Ser Leu Lys Val Arg Pro
236 210 215 220
237 Val Ala Leu Ile Pro Ser Ser Ile Pro His Glu Val Pro Gln Ile Leu
238 225 230 235 240
239 Ile Asn Arg Glu Pro
240 245

```

242 &lt;210&gt; SEQ ID NO: 5

243 &lt;211&gt; LENGTH: 237

244 &lt;212&gt; TYPE: PRT

245 &lt;213&gt; ORGANISM: Salmonella typhimurium

247 &lt;400&gt; SEQUENCE: 5

```

248 Met Met Glu Asn Pro Arg Val Leu Val Leu Thr Gly Ala Gly Ile Ser
249 1 5 10 15
250 Ala Glu Ser Gly Ile Arg Thr Phe Arg Ala Ala Asp Gly Leu Trp Glu
251 20 25 30
252 Glu His Arg Val Glu Asp Val Ala Thr Pro Glu Gly Phe Ala Arg Asn
253 35 40 45
254 Pro Gly Leu Val Gln Thr Phe Tyr Asn Ala Arg Arg Gln Gln Leu Gln
255 50 55 60
256 Gln Pro Glu Ile Gln Pro Asn Ala Ala His Leu Ala Leu Ala Asn Leu
257 65 70 75 80
258 Lys Lys Arg Leu Ala Ile Ala Phe Leu Leu Val Thr Gln Asn Ile Asp

```

RAW SEQUENCE LISTING ERROR SUMMARY  
PATENT APPLICATION: US/09/461,580C

DATE: 11/21/2002  
TIME: 10:29:35

Input Set : A:\13407-016001.txt  
Output Set: N:\CRF4\11212002\I461580C.raw

Please Note:

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:27; Xaa Pos. 8  
Seq#:38; Xaa Pos. 4, 6, 8